



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

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U.S. ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS I COMMERCIAL NON-HAZARDOUS

Permit Number: MI-035-1I-C001

Well Name: Miller #23-41

Pursuant to the Underground Injection Control regulations of the U.S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations (40 CFR), Parts 124, 144, 146, and 147,

SWD Specialties, LLC of Kalkaska, Michigan

is hereby authorized to operate a commercial Class I non-hazardous injection well located in Michigan, Clare County, T19N, R6W, Section 23, NE Quarter Section, for injection into the Dundee Limestone at depths between 4003 feet and 4055 feet upon the express condition that the permittee meet the restrictions set forth herein.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit becomes effective. The following attachments are incorporated into this permit: A, B, C, D, E, F, G and H.

This permit is a minor modification of a permit that was signed on September 10, 2008. The modification shall become effective on SEP 24 2013. The permit shall remain in full force and effect during the life of the permit, unless this permit is revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 or 144.41.

This permit and authorization to inject shall expire at midnight on October 10, 2018, unless terminated prior to the expiration date.

Signed and Dated September 24, 2013

A handwritten signature in blue ink, appearing to read "Tinka G. Hyde".

Tinka G. Hyde
Director, Water Division



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS II COMMERCIAL

Permit Number: MI-079-2D-C016

Facility Name: Wlosinski #2-27

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the (USEPA) at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (CFR),

SWD Specialties, LLC of Kalkaska, Michigan

is hereby authorized to operate an existing salt water injection well located in Michigan, Kalkaska County, T28N, R7W, Section 27, 1/4 Section NE, into the Dundee Formation at a depth between 2405 and 2582 feet, upon the express condition that the permittee meet the restrictions set forth herein.

The purpose of the injection is for commercial disposal of fluids related to the production of oil and gas and oilfield-contaminated groundwater as approved by the Director.

All reference to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This is a minor modification of a permit that was signed on September 7, 1988. The modification shall become effective on SEP 24 2013. The permit shall remain in full force and effect during the operating life of the well, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan unless that state chooses to adopt this permit as a state permit.

Signed and dated: September 24, 2013

Tinka B. Hyde
Tinka Hyde
Director, Water Division

This permit contains 15 pages and attachments A, B C and D.



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS II COMMERCIAL

Permit Number: MI-079-2D-C008

Facility Name: Simpson #1-9

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the USEPA at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (40 CFR),

SWD Specialties, LLC of Kalkaska, Michigan

is hereby authorized to continue operation of an existing injection well located in Michigan, Kalkaska County, T27N, R7W, Section 9, 1/4 Section NW, for injection into the Traverse Limestone, Bell Shale and Dundee Limestone at depths between 1452 and 3125 feet, upon the express condition that the permittee meet the restrictions set forth herein.

The purpose of the injection is for commercial disposal of fluids related to the production of oil and gas and oilfield-contaminated groundwater as approved by the Director.

All reference to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This is a minor modification of a permit that was signed on May 28, 1999. The modification shall become effective on SEP 24 2013. The permit shall remain in full force and effect during the operating life of the well, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan unless the State chooses to adopt this permit as a State permit. This permit will be reviewed at least every five (5) years from the effective date specified above.

Signed and dated:

Tinka S. Hyde
September 24, 2013
Tinka Hyde
Director, Water Division

This permit contains 14 pages and Attachments A, B, C and D.



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS II COMMERCIAL

Permit Number: MI-055-2D-C015

Facility Name: State Blair #5-21

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the USEPA at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (40 CFR),

SWD Specialties, LLC of Kalkaska, Michigan

is hereby authorized to continue operation of an existing injection well located in Michigan, Grand Traverse County, T26N, R11W, Section 21, 1/4 Section NE, into the Traverse Formation and Traverse Lime at a depth between 1408 and 2046 feet, upon the express condition that the permittee meet the restrictions set forth herein.

The purpose of the injection is commercial disposal of fluids related to the production of oil and gas and oilfield-contaminated groundwater as approved by the Director.

All reference to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This is a minor modification of a permit that was signed on September 11, 1996. The modification shall become effective on SEP 24 2013. The permit shall remain in full force and effect during the operating life of the well, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan unless the State chooses to adopt this permit as a State permit. This permit will be reviewed at least every five (5) years from the effective date specified above.

Signed and dated:

September 24, 2013

Tinka G. Hyde

Tinka Hyde
Director, Water Division

This permit contains 14 pages and Attachments A, B, C and D.



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS II COMMERCIAL

Permit Number: MI-055-2D-C033

Facility Name: Wedow State Blair #2-28

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the USEPA at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (40 CFR),

SWD Specialties, LLC of Kalkaska, Michigan

is hereby authorized to continue operation of an existing injection well located in Michigan, Grand Traverse County, T26N, R11W, Section 28, 1/4 Section NW, into the Traverse Limestone and Bell Shale at a depth between 1476 and 2104 feet, upon the express condition that the permittee meet the restrictions set forth herein.

The purpose of the injection is commercial disposal of fluids related to the production of oil and gas and oilfield-contaminated groundwater as approved by the Director.

All reference to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This is a minor modification of a permit that was signed on June 2, 1997. The modification shall become effective on SEP 24 2013. The permit shall remain in full force and effect during the operating life of the well, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan unless the State chooses to adopt this permit as a State permit. This permit will be reviewed at least every five (5) years from the effective date specified above.

Signed and dated:

September 24, 2013
Tinka B. Hyde
Tinka Hyde
Director, Water Division

This permit contains 14 pages and Attachments A, B, C and D.



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS II COMMERCIAL

Permit Number: MI-079-2D-C001

Facility Name: Hogerheide #1-29 SWD

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the USEPA at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (40 CFR),

SWD Specialties, LLC of Kalkaska, Michigan

is hereby authorized to continue operation of an existing injection well located in Michigan, Kalkaska County, T27N, R7W, Section 29, 1/4 Section SE, into the Lower Antrim, Traverse, Dundee and Reed City formations at a depth between 1920 and 3000 feet, upon the express condition that the permittee meet the restrictions set forth herein.

The purpose of the injection is for commercial disposal of fluids related to the production of oil and gas and oilfield-contaminated groundwater as approved by the Director.

All reference to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This is a minor modification of a permit that was signed on July 1, 1996. The modification shall become effective on SEP 24 2013. The permit shall remain in full force and effect during the operating life of the well, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan unless the State chooses to adopt this permit as a State permit. This permit will be reviewed at least every five (5) years from the effective date specified above.

Signed and dated:

September 24, 2013

Tinka B. Hyde

Tinka Hyde
Director, Water Division

This permit contains 14 pages and Attachments A, B, C and D.

ATTACHMENT G
LIST OF PRESENTLY APPROVED SOURCES

Presently approved "sources" of waste for disposal into the Miller #23-41 injection well are identified below by identification number, company name, location, as well as sampling frequency and analytical parameters. Currently there are four approved source of Class I non-hazardous fluid being disposed of into the well. Future "sources", as approved by the Director, will be added to this Part III(G) of the permit.

CLASS I NON-HAZARDOUS WASTE FLUIDS¹

"Source" ID Number	"Source" Name	Location (Address)	Waste Analysis Parameters	Waste Sampling Frequency
1	Waste Management of Michigan, Inc., Waters Landfill	11375 Sherman Road, Frederic, MI 49733	Toxicity Characteristic List (see 40 CFR §261.24)	Annually
			Fingerprint**	Quarterly
2	Oakland County Road Commission	P.O. Box 1071 Mt. Pleasant, MI 48804	Toxicity Characteristic List (see 40 CFR §261.24)	Annually
			Fingerprint**	Quarterly
3	Target Oil Tool Shop	3540 US 131 Kalkaska, MI 49646	Toxicity Characteristic List (see 40 CFR §261.24)	Annually
			Fingerprint**	Quarterly
4	Arrow Energy Services, Inc	4030 Columbus Drive Kalkaska, MI 49646	Toxicity Characteristic List (see 40 CFR §261.24)	Annually
			Fingerprint**	Quarterly
5	Roscommon County Landfill	3401 Landfill Road Roscommon, MI 48653	Toxicity Characteristic List (see 40 CFR §261.24)	Annually
			Fingerprint**	Quarterly

**Minimum Fingerprinting analytical parameters as specified in Part III(A) subpart(F) of this permit

¹ Non-hazardous waste fluid sampling parameters and frequencies shall be determined on a case specific basis, with different sources being tested at differing frequencies. Also, different sources may be required to be tested for different parameters.

List of Presently Approved Sources

Presently there are 271 approved sources of oil field brine being disposed of into the following SWD Specialties injection wells:

State Blair #5-21 SWD	Permit #MI-055-2D-C015
Wedow St. Blair #2-28	Permit #MI-055-2D-C033
Hogerheide #1-29	Permit #MI-079-2D-C001
Simpson #1-9	Permit #MI-079-2D-C008
Wlosinski #2-27	Permit #MI-079-2D-C016

They are identified below by field names, location and formation names in the table below. Future sources, as approved by the Director, will be added to this Part III(D) of the permit. A complete chemical analysis of each source of brine that makes up the injection fluid is included in Attachment H of the permit file.

New ID	Old ID	Field Name	Location			Formation Name
			T	R	Sec.	
1	S81	Albion Scipio 1 South	1S	5W	22	Trenton
2	S84	Albion Scipio 3 South	3S	4W	4	Trenton
3	N140	Allis 35-34N-02E	34N	2E	35	Niagara
4	N67	Allis 24	34N	2E	25	Niagara
5	N126	Allis 34-34N-02E	34N	2E	34	Niagara
6	N148	Allis 36-34N-02E	34N	2E	36	Niagara
7	N101	Au Gres	19N	6E	12	Prairie du Chien
8	N133	Au Gres	19N	7E	7	Salina A-1 Carbonate
9	N85	Bagley 35-30N-3W	30N	3W	35	Niagara
10	N80	Bear Lake	23N	15W	1	Antrim
11	N109	Bear Lake 8	23N	15W	8	Niagara
12	N141	Bear Lake 9	23N	15W	9	Niagara
13	N167	Bear Lake 09-23N-15W	23N	15W	9	Salina A-1 Carbonate
14	N129	Bear Lake 11-23N-15W	23N	15W	11, 14	Niagara
15	N1	Bear Lake 20	23N	15W	20	Niagara
16	N157	Bear Lake 23-23N-15W	23N	15W	23	Niagara
17	N2	Bear Lake 25	23N	15W	25	Brown Niagara
18	N105	Bear Lake 27	23N	15W	27, 34	Niagara
19	N110	Bear Lake 31	23N	15W	31	Niagara
20	N3	Bear Lake 32	23N	15W	33	Brown Niagara
21	N4	Bear Lake 33	23N	5E	29	Brown Niagara
22	N52	Beaver Creek	25N	5W	13	Detroit River
23	N74	Big Creek	25N	2E	23	Richfield
24	N5	Blair 4A-26N-11W	26N	11W	34	Niagara
25	N6	Blair 14	26N	11W	15	Niagara
26	N7	Blair 28-26N-11W	26N	11W	28, 29	Niagara
27	N112	Blair 34-26N-11W	26N	11W	34	Niagara
28	N8	Blue Lake	28N	5W	12, 16	Niagara
29	N9	Blue Lake 5	28N	5W	5	Niagara
30	N114	Blue Lake-08-28N-05W	28N	5W	8	Niagara
31	N53	Blue Lake 18	28N	5W	7	Niagara
32	N54	Boundry	25N	8W	32	Niagara
33	S1	Brighton 2	2N	6E	2	Gray Niagara
34	S2	Brighton 10	2N	6E	10	Niagara
35	S3	Brighton 11	2N	6E	11	Niagara
36	S4	Brighton 11	2N	6E	14	Niagara
37	S5	Brighton 15	2N	6E	15	Brown Niagara
38	S6	Brighton 27	2N	6E	27	Niagara

39	N132	Brown	02-22N-15W	22N	15W	2	Niagaran
40	N10	Brown	5	22N	15W	5	Niagaran
41	N11	Brown	19	22N	15W	19	Niagaran
42	N73	Buckeye		18N	1W	36	Prairie du Chien
43	N113	Buckeye	North	18N	1W	3,10,11	Dundee
44	N104	Burleigh		21N	5E	35	Prairie du Chien
45	S7	Camp Dearborn		2N	7E	9	Niagaran
46	N142	Case	15	34N	3E	3,15	Niagaran
47	N143	Case	21-34N-03E	34N	3E	21	Niagaran
48	N12	Case	30-34N-3E	34N	2E	25	Niagaran
49	N144	Case	30A-34N-03E	34N	3E	24	Niagaran
50	N130	Case	33-34N-03E	34N	3E	33	Niagaran
51	N158	Charlton	31-30N-01W	30N	2W	36	Niagaran
52	N153	Chestonia	31	30N	6W	31	Antrim
53	N75	Church Lake		25N	2E	16	Prairie du Chien
54	S8	City of Sterling Hts.	21	2N	12E	21	Niagaran
55	N14	Claybanks	2	13N	18W	2	Brown Niagaran
56	N76	Clayton		18N	1W	36	Prairie du Chien
57	N117	Cleon	19	24N	13W	19	Niagaran
58	N15	Cleon	19A	24N	13W	19	Niagaran
59	N63	Coldsprings		28N	6W	13,24,30	Niagaran
60	N70	Coldsprings	12	28N	5W	7	Niagaran
61	N16	Coldsprings	22	28N	6W	23	Niagaran
62	N164	Coldwater		16N	6W	29,32	Michigan Stray
63	N17	Colfax	14-25N-13W	25N	13W	14	Gray Niagaran
64	N18	Colfax	31-25N-13W	25N	13W	31	Niagaran
65	N100	Colfax	36	25N	13W	35	Niagaran
66	S66	Commerce	14	2N	8E	13	Niagaran
67	N106	Connors Marsh		27N	1W	28	Prairie du Chien
68	S60	Convis	8	1S	6W	8,9	Brown Niagaran
69	S62	Convis	10	1S	6W	10	Niagaran
70	S86	Convis	18-01S-06W	1S	6W	18	Niagaran
71	N19	Cranberry Lake		20N	6W	12	Prairie du Chien
72	N20	Custer	Antrim	29N	6W	7	Antrim
73	N145	Custer	33	29N	7W	33	Dundee
259		Dover		31N	2W	33	Niagaran
74	S9	Eaton Co.-Antrim		3N	3W	11	Antrim
75	S10	Eaton Rapids		2N	3W	28	Niagaran
76	S11	Eaton Rapids	21	2N	3W	21	Niagaran
77	S12	Eaton Rapids	27	2N	3W	20	Niagaran
78	S13	Eaton Rapids	32	2N	3W	32	Niagaran
79	S69	Eaton Rapids	36	1N	2W	6,7	Niagaran
				2N	2W	31	
80	N21	East Bay		26N	10W	1	Niagaran
81	N22	East Bay		26N	10W	11	Niagaran
82	N23	East Bay		26N	10W	7	Brown Niagaran
83	N62	East Bay	2A	26N	10W	2	Niagaran
84	N155	East Bay	04-26N-10W	26N	10W	4	Niagaran
85	N71	East Bay	5	26N	10W	5	Brown Niagaran
86	N24	East Bay	9	26N	10W	9	Niagaran
87	N25	East Bay	10	26N	10W	10	Niagaran
88	N159	East Bay	11	26N	11W	11	Niagaran
89	N68	East Bay	14-26N-10W	26N	10W	15	Brown Niagaran
90	N26	East Bay	15-26N-10W	26N	10W	15	Niagaran
91	N121	East Norwich		24N	5W	11	Richfield
92	N103	Edenville		16N	1W	15	Berea
258		Elmwood		14N	10E	21	Dundee
93	N90	Enterprise		23N	5W	11	Richfield
94	N82	Essexville		14N	6E	21	Prairie du Chien

95 N97	Essexville	16N	6E	17	
254	Evart	14N	6E	18	Dundee
96 N55	Excelsior 6	18N	8W	27	Richfield
260	Excelsior	27N	6W	6	Niagara
97 N108	Ferry	27N	6W	13, 24, 25	Collingwood
98 N131	Filer 10-21N-17W	14N	16W	23	Niagara
99 N27	Filer 11-21N-17W	21N	17W	11	Brown Niagara
100 N28	Filer 33-21N-17W	21N	17W	11	Niagara
101 N56	Forward	21N	17W	33	Niagara
102 N13	Forward	21N	6W	30	Niagara
103 S80	Fowlerville	21N	6W	31	Prairie du Chien
256	Fraser	3N	3W	1	Berea
104 N86	Frederic 2	16N	4E	12	Trempealeau
105 N81	Frederic 12	28N	4W	2	Niagara
257	Freeman Redding	28N	4W	12	Niagara
106 N29	Garfield	19N	6W	33	Dundee
253	Garfield Sec 08 (Beaver Creek)	25N	6W	25	Glenwood
107 N163	Grant 03-25N-12W	25N	5W	9, 10	Richfield
108 N91	Grant 04-25N-12W	25N	12W	3	Niagara
109 N30	Grant 10-25N-12W	25N	12W	4, 9	Niagara
110 N168	Grant 12A-25N-12W	25N	12W	11	Niagara
111 N154	Grant 16-25N-12W	25N	12W	12	Niagara
112 N31	Grant 22	25N	12W	16	Niagara
113 N32	Grant 29A	25N	12W	22	Niagara
114 N156	Grant 31-25N-12W	25N	12W	29	Brown Niagara
115 N33	Grant 34-25N-12W	25N	12W	31	Brown Niagara
116 N34	Green	25N	12W	34	Niagara
117 S14	Green Oak 12	16N	10W	28	Clinton
118 S61	Green Oak 14	1N	6E	12	Niagara
119 N57	Grout	1N	6E	14	Niagara
120 S15	Hamlin	18N	2W	14	Prairie du Chien
121 S16	Hamlin	1N	3W	10	Niagara
122 S17	Hamlin 2	1N	3W	13	Niagara
123 S18	Hamlin 6	1N	3W	11	Niagara
124 S83	Hartland 36-03N-06E	1N	3W	6	Niagara
125 N135	Hartland 36-03N-06E	2N	6E	1, 22	Brown Niagara
		3N	6E	25, 36	
126 N149	Hayes 11	2N	6E	1, 22	Brown Niagara
127 N99	Hayes 32	3N	6E	25, 36	
128 N35	Hickey Creek	24N	3E	6	Niagara
129 N58	Hickey Creek	29N	4W	32	Niagara
130 S19	Highland 36	25N	1W	29	Prairie du Chien
131 S20	Ingham Co.-Antrim	25N	2W	24	Prairie du Chien
132 S21	Ingham Co.-Antrim	3N	7E	36	Niagara
133 S22	Ingham Co.-Antrim	3N	1W	8	Antrim
134 S67	Ingham 12	4N	2E	8	Antrim
135 S78	Ingham 25	4N	2E	24	Antrim
136 S23	Iosco 17A-2N-3E	2N	1E	12	Niagara
137 S24	Iosco "25"	2N	1E	25	Niagara
138 S25	Iosco 28	2N	3E	17	Brown Niagara
139 N36	Kalkaska 3-27N-07W	2N	3E	25	Niagara
140 N72	Kalkaska 14	2N	3E	28	Niagara
141 N79	Kalkaska 17	27N	7W	3	Niagara
142 N64	Kalkaska 20	27N	7W	14	Niagara
143 N37	Kalkaska 26-27N-08W	27N	7W	18	Gray Niagara
144 N96	Kawkawlin	27N	8W	16, 19	Brown Niagara
		26N	8W	26	Niagara
		15N	4E	36	Dundee

145 N98	Kawkawlin PdC Gas Pool	14N	4E	11,12	Prairie du Chien
146 S87	Lee 09-01S-05W	14N	5E	7,8	
		1S	5W	9	Niagaran/A-1
147 S70	Lee 22-1S-5W(A)	1S	5W	22	Carbonate
148 S26	Lee 34	1S	5W	34	Niagaran
149 S27	Lenox 36-4N-14E	4N	14E	36	Black River
150 S72	Leslie 4	1N	1W	4	Niagaran
151 N119	Logan	22N	4E	23	Niagaran
152 S28	Lyon	1N	7E	9	Berea
153 S29	Lyon	1N	7E	24	Niagaran
154 S30	Lyon Twp.	1N	7E	21	Niagaran
155 S63	Lyon 8	1N	7E	8	Niagaran
156 S31	Lyon 15	1N	7E	15	Niagaran
157 S64	Lyon 17	1N	7E	17	Niagaran
158 S32	Lyon 18	1N	7E	18	Niagaran
159 S33	Lyon 29	1N	7E	29	Niagaran
160 N38	Mancelona 33-29N-05W	28N	5W	4	Niagaran
161 N89	Manistee 4, Niag. Pool	22N	16W	4	Gray Niagaran
162 N116	Manistee 8-21N-16W	21N	16W	8	Niagaran
163 N93	Manistee 10-22N-16W	22N	16W	10	Niagaran
164 N39	Manistee 12-22N-16W	22N	16W	12	Niagaran
165 N40	Manistee 17-22N-16W	22N	16W	17	Niagaran
166 N147	Manistee 18-22N-16W	22N	16W	18	Niagaran
167 N41	Manistee 25-22N-17W	22N	17W	25,30	Niagaran
168 N115	Maple Grove 02-23N-14W	23N	14W	2	Niagaran
169 N128	Maple Grove 07-23N-14W	23N	14W	7	Niagaran
170 N42	Marilla 6	23N	13W	6	Niagaran
171 N69	Marion	20N	7W	36	Prairie du Chien
172 S34	Marion 18-2N-4E	2N	4E	18	Niagaran
173 N136	Mayfield 01-25N-11W	25N	11W	1	Brown Niagaran
174 N162	Mayfield 09-25N-11W	25N	11W	9	Niagaran
175 N138	Mayfield 29B -25N-11W	25N	11W	29	Niagaran
176 N66	Michigan Antrim	29N	2W	10	Antrim
177 S88	Milford 17-2N-7E-Pool B	2N	7E	16	Brown Niagaran
178 S35	Milford 18	2N	7E	18	Niagaran
179 S36	Milford 17 & 18	2N	7E	8	Niagaran
180 S37	Milford 29	2N	7E	29	Niagaran
181 S38	Milford 30	2N	7E	29	Niagaran
182 S39	Milford 32	2N	7E	29	Niagaran
183 S40	Milford 33	2N	7E	33	Niagaran
184 N77	Mio	25N	3W	29,30,	Prairie du Chien
185 S41	Northville	1S	8E	9	Niagaran
186 S42	Northville 6	1S	8E	6	Trenton
187 S43	Northville 11	1S	8E	11,32-34	Niagaran
188 N43	Norwich	15N	11W	22	Prairie du Chien
189 N44	Norwich 29	15N	11W	29	Prairie du Chien
190 S44	Novi Twp.	1N	8E	17	Niagaran
191 S45	Novi Twp.	1N	8E	29	Niagaran
192 N94	Onekama 24	23N	16W	24	Niagaran
193 S59	Onondaga 18	1N	2W	18	Salina/Niagaran
194 S46	Onondaga 28A	1N	2W	28	Brown Niagaran
195 S79	Onondaga 28-01N-02W	1N	2W	28	Niagaran
196 S47	Onondaga 29	1N	2W	29	Niagaran
197 N165	Orient	17N	7W	10,11,18	Michigan Stray
198 N65	Otsego Lake 24-29N-3W	29N	3W	24	Niagaran
199 N107	Otto	13N	16W	18	Niagaran
200 N88	Paradise 7	25N	10W	7	Niagaran
201 N111	Paradise 20	26N	10W	20	Niagaran

202	N59	Paradise 22	26N	10W	22	Niagara
203	N45	Paradise 27	26N	10W	22	Niagara
204	S65	Pennfield	1S	7W	21	Niagara
205	N83	Pinconning West	16N	4E	7	Prairie du Chien
206	N83	Pinconning South	16N	4E	12	Prairie du Chien
207	N92	Porter	13N	1W	17, 20, 31	Dundee
	S48		13N	2W	1, 3, 12	
208	N118	Porter	13N	2W	3	Detroit River
209	N139	Porter	13N	2W	11	Richfield
210	S49	Putnam 4	1N	4E	4	Niagara
211	N127	Puttygut Gas Storage	4N	15E	11	Dundee
	S82					
212	N46	Ranger	22N	5E	27	Prairie du Chien
213	N146	Rapid River 27-28N-07W	28N	7W	27	Niagara
214	N60	Rapid River 35	28N	7W	35	Niagara
215	N137	Ray Gas Storage	5N	13E	36	Niagara
	S85					
216	N47	Riverside 15	21N	7W	15	Prairie du Chien
217	N84	Rose City	24N	2E	20, 21, 27, 28	Prairie du Chien
255		Saint Helen	24N	1W	30	Richfield
218	S50	Salem 5	1S	7E	5	Niagara
219	N102	Salinger	25N	1W	19	Prairie du Chien
220	N61	Santiago	20N	6E	23	Prairie du Chien
221	S51	Shelby	3N	12E	2	Niagara
222	S75	Shelby 3	3N	12E	3	Niagara
223	S52	Shelby 9/WB	3N	12E	9	Niagara
224	S53	Shelby 21-28	3N	12E	21	Niagara
225	N48	Springdale 25	24N	14W	25	Brown Niagara
226	S73	Springport	1S	3W	14	Trenton
227	S54	Sterling	2N	12E	16	Niagara
228	N120	Stoney Lake	13N	18W	10	Traverse Lime
229	N160	Thompson Corners	15N	15W	25	Clinton
230	N49	Union 3A	26N	9W	3	Niagara
231	N50	Various	29N	2E	10	Various (CO ₂ plant)
232	S76	Vevay	2N	1W	20	Niagara
233	S55	Vevay 7	2N	1W	7	Niagara
234	S56	Vevay 17	2N	1W	17	Niagara
235	N78	Wagner Lake	25N	2E	14	Prairie du Chien
236	N87	West Branch	21N	3E	6	Richfield
237	N122	West Branch	22N	4E	13	Prairie du Chien
238	N123	West Branch	22N	2E	18, 26	Amherstburg
239	N124	West Branch	22N	2E	26	Amherstburg
240	N125	West Branch	22N	2E	18, 20	Prairie du Chien
241	N134	West Branch	22N	2E	18	Amherstburg
242	N151	West Branch	22N	3E	21	Richfield/ Amherstburg
243	N152	Wexford 06-24N-12W	24N	12W	6	Gray Niagara
244	S68	White Lake (CPF)	3N	8E	29	Gray Niagara
245	S57	White Lake 29	3N	8E	29	Niagara
246	S58	White Oak 19	2N	3W	19	Niagara
247	S77	White Oak 29	2N	2E	29	Niagara
248	S71	White Oak 32, 2N-2E	2N	2E	32	Niagara
249	N51	Winterfield South	20N	6W	31	Prairie du Chien
250	N95	Wisher	14N	7E	23	Richfield
	S74					
251	N161	Woodville	15N	11W	28	Prairie du Chien
252	N166	Woodville	15N	11W	20, 21, 29	Michigan Stray

261	Adams Field	19N	3E	26	Dundee
	Shearer #1 Well				
262	Williams Field,	14N	3E	14	Traverse
	Zimmerman 2-8 Well				
263	Zennenburg, LLC	15N	11E	29	Dundee
	Grant Field; Marshall #1				
264	Fork;	16N	7W	16	Dundee
	Hartman A1-16 well				
265	Hatton;	18N	4W	1	Dundee
	Trahan Powell #1 well				
266	Goodwell Field;	14N	11W	9	Dundee
267	New Haven Facility	10N	4W	4	Michigan Stray
268	Kawkawlin Field	14N	5E	4	Dundee
	Savage et al #2				
269	Nellsville Field	22N	4W	8	Amherstburg Fm
	Porter Hogan Trust 1-8				
270	Wildcat Field	21N	7W	36	Prairie Du Chien
	State Marion & Riverside 14-36				
271	Unnamed Field	25N	6W	36	Collingwood Fm
	Encana State Garfield 1-25 HDI				
272	Fallow Field;	25N	11W	18	Burnt Bluff Fm
	Schmude Oil Kramp 1-18				
273	Undesignated Field;	18N	1W	3	Dundee Fm
	Schranz W1-3				
274	Undesignated Field;	14N	11W	8	Prairie Du Chien Fm
	Jennings Anderson et al 1-8A				
275	Undesignated Field;	25N	4W	11	Collingwood Fm
	Encana's State Beaver Creek 1-23 HDI				
276	Wildcat Field;	26N	11W	20	Niagaran Fm
	Arbor's Norton Woods 1-20A				



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 24 2013

REPLY TO THE ATTENTION OF:

WU-16J

CERTIFIED MAIL 7009 1680 0000 7664 2002
RETURN RECEIPT REQUESTED

Mr. Steve Kniss
VP, Operations, SWD Specialties
3947 US 131 North
Kalkaska, Michigan 49646

Re: One Class I and Five Class II Minor-Modified Underground Injection Control (UIC) Permits #MI-035-1I-C001, #MI-055-2D-C015, #MI-055-2D-C033, #MI-079-2D-C001, #MI-079-2D-C008, and #MI-079-2D-C016

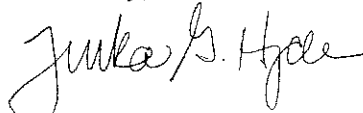
Dear Mr. Kniss:

The final minor-modified pages for the six SWD Specialties, LLC permits referenced above are enclosed. They replace the correlated pages in the existing permits. Pursuant to Title 40 of the Code of Federal Regulations Section 144.41(e), these permits are modified as follows:

<u>Page/Permit Condition</u>	<u>Modification</u>
1	Effective date of modification
Class II Att. D/List of Approved Sources	Add sources: 272 Fallow Field in Burnt Bluff Formation; 273 unnamed field in Dundee Formation; 274 unnamed field in Prairie du Chien Formation; 275 unnamed field in Collingwood Formation; and 276 Wildcat Field in Niagaran Formation
Class I Att. G/ List of Approved Sources	Add sources: 272 Fallow Field in Burnt Bluff Formation; 273 unnamed field in Dundee Formation; 274 unnamed field in Prairie du Chien Formation; 275 unnamed field in Collingwood Formation; and 276 Wildcat Field in Niagaran Formation

This action constitutes issuance of six minor-modified permits which become effective on the date specified in the permits. If you have any questions, please contact Janette E. Hansen by phone at (312) 886-0241 or by email to hansen.janette@epa.gov.

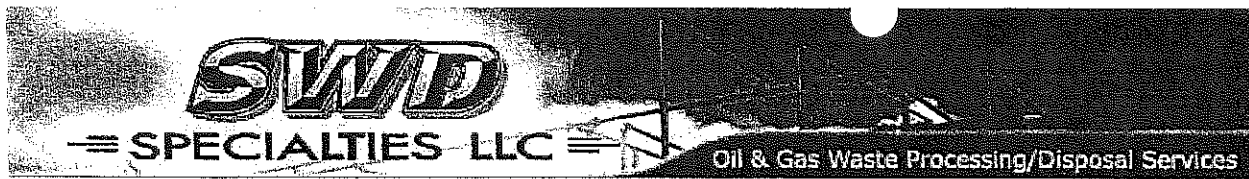
Sincerely,

A handwritten signature in cursive script, appearing to read "Tinka G. Hyde".

Tinka G. Hyde
Director, Water Division

Enclosures

cc: Mark Snow, Michigan Department of Environmental Quality
Ray Vugrinovich, Michigan Department of Environmental Quality



3947 US 131 North Kalkaska, MI 49646

August 1, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

RE: **SWD Specialties, LLC Class I&II Waste Source Addition #273-**
Miller 23-41 SWD Injection Well #MI-035-1I-C001
Hogerheide 1-29 SWD Injection Well #MI-079-2D-C001
Simpson 1-9 SWD Injection Well #MI-079-2D-C008
State Blair 5-21 SWD Injection Well #MI-055-2D-C015
Wedow St. Blair 2-28 SWD Injection Well #MI-055-2D-C033
Wlosinski 2-27 SWD Injection Well #MI-079-2D-C016

SWD Specialties, LLC submits the following information and analysis for the following Class II waste approval request to include produced brine and related site fluids including mixtures of brine that include flowback. Please add to the source list for the above referenced injection wells.

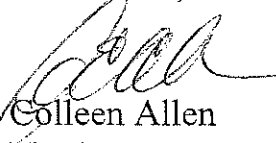
Lease: Schmude Oil Company
Well: Kramp 1-18
County: Grand Traverse
T25N, R11W, Section 18 SE¼ of NE¼ of NW ¼
Field: Fallow
Formation: Burnt Bluff

Company: Schmude Oil Company
P.O. Box 1008
Traverse City, MI 49684
231-947-4410

Please send any correspondence to the address below.

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref 40 CFR Section 144.32)

Thank You,



Colleen Allen
Northern A-1 Environmental Services
P.O. Box 1030
Kalkaska, MI 49646
colleen@northerna1.com

RECEIVED

AUG 08 2013

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

cc: Steve Kniss – SWD Specialties
Ken Cooper – Petrotek
Well File



4125 Cedar Run Rd., Suite B
Traverse City, MI 49684
Phone 231-946-6767
Fax 231-946-8741
www.sosanalytical.com

COMPANY: NORTHERN A-1

SOS PROJECT NO: 133472

NAME:

SAMPLED BY: CALEB HORTON

PROJECT NO:

WSSN:

DATE SAMPLED: 7/19/2013

WELL PERMIT:

TIME SAMPLED: 2:00 PM

TAX ID:

SAMPLE MATRIX: WATER

LOCATION:

DATE RECEIVED: 7/19/2013

TIME RECEIVED: 4:30 PM

MI

COUNTY:

*MATRIX INTERFERENCE ENCOUNTERED DURING ANALYSIS OF BARIUM. LOD IS ELEVATED.

TWP:

INORGANICS

No:	Analysis	Concentration	LOD	Units	Analyst	Date Completed	Drinking Water Req Limit(MCL)
SAMPLE ID: SCHMUDE KRAMP I-18							
1	ALKALINITY SM2320-BICARB	230	100	mg/L (PPM)	KMJ	7/25/2013	
1	ALKALINITY SM2320-CARBONATE	ND	100	mg/L (PPM)	KMJ	7/25/2013	
1	BARIUM EPA 200.8	ND*	1.0	mg/L (PPM)	SF	7/25/2013	
1	CALCIUM EPA 200.8	68100	1000	mg/L (PPM)	SF	7/25/2013	
1	CHLORIDE EPA 325.2	175000	2500	mg/L (PPM)	KMJ	7/24/2013	
1	CONDUCTIVITY SM2510-B	558000	6000	uS/cm	KMJ	7/23/2013	
1	IRON EPA 200.8	24.7	10.0	mg/L (PPM)	SF	7/25/2013	
1	MAGNESIUM EPA 200.8	10700	1000	mg/L (PPM)	SF	7/25/2013	
1	pH EPA 150.1	5.9	+/- 0.10 s.u.		CG	7/19/2013	
1	POTASSIUM EPA 200.8	14800	1000	mg/L (PPM)	SF	7/25/2013	
1	RESIDUE, FILTERABLE(TDS)/SM2540C	378000	6000	mg/L (PPM)	KMJ	7/23/2013	
1	RESISTIVITY	0.018		ohm-m	SS	7/25/2013	
1	SODIUM - EPA 200.8	10500	1000	mg/L (PPM)	SF	7/25/2013	
1	SPECIFIC GRAVITY	1.2128			RS	7/25/2013	
1	SULFATE EPA 375.4	50	50	mg/L (PPM)	KMJ	7/26/2013	
1	SULFIDE EPA 376.2	1.7	0.1	mg/L (PPM)	RS	7/24/2013	

ND = NOT DETECTED

LOD = LIMIT OF DETECTION

SMCL = FEDERAL NON-ENFORCEABLE LIMIT

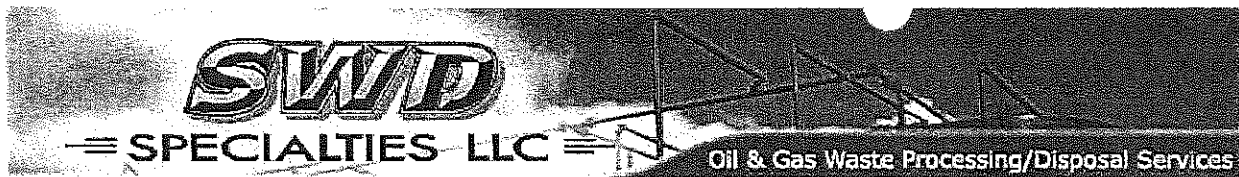
MCL = MAXIMUM CONTAMINANT LEVEL

s.u. = STANDARD pH UNITS REPORTED AT 25 C

DISS = DISSOLVED

APPROVED BY:

Shanna Shea
SHANNA SHEA
LAB MANAGER



3947 US 131 North Kalkaska, MI 49646

August 6, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

RE: **SWD Specialties, LLC Class I&II Waste Source Addition #276-**
Miller 23-41 SWD Injection Well #MI-035-1I-C001
Hogerheide 1-29 SWD Injection Well #MI-079-2D-C001
Simpson 1-9 SWD Injection Well #MI-079-2D-C008
State Blair 5-21 SWD Injection Well #MI-055-2D-C015
Wedow St. Blair 2-28 SWD Injection Well #MI-055-2D-C033
Wlosinski 2-27 SWD Injection Well #MI-079-2D-C016

SWD Specialties, LLC submits the following information and analysis for the following Class II waste approval request to include produced brine and related site fluids including mixtures of brine that include flowback. Please add to the source list for the above referenced injection wells.

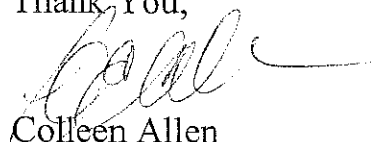
Lease: Elek, Aaron III
Well: Schranz, W1-3
County: Gladwin
T18N, R1W, S 3 CN¼ of SE¼ of SE¼
Field: No field name found
Formation: Dundee

Company: Elek, Aaron III
357 River Drive
Bay City, MI 48706
517-686-6286

Please send any correspondence to the address below.

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref 40 CFR Section 144.32)

Thank You,



Colleen Allen
Northern A-1 Environmental Services
P.O. Box 1030
Kalkaska, MI 49646
colleen@northern1.com

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AUG 07 2013

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

cc: Steve Kniss – SWD Specialties
Ken Cooper – Petrotek
Well File

Monday, July 29, 2013

Fibertec Project Number: 56917
Project Identification: Schanz 1-3 Dave Elkin Oil /
Submittal Date: 07/15/2013

Mr. Ron Trojanek
SWD Specialties, LLC
3947 US 131 North
P.O. Box 1030
Kalkaska, MI 49646

Dear Mr. Trojanek,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note samples will be disposed of 30 days after reporting date.

Sample was split and preserved at laboratory on July 15, 2013.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,



Daryl P. Strandbergh
Laboratory Director

DPS/kc

Enclosures

Client Identification: SWD Specialties, LLC	Sample Description: Brine	Chain of Custody: 119711
Client Project Name: Schanz 1-3 Dave Elkin Oil	Sample No: 1	Collect Date: 07/12/13
Client Project No: NA	Sample Matrix: Brine	Collect Time: 11:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.

Trace Elements by ICP/AES, Dissolved (EPA 0200.7)

Aliquot ID: 56917-001A

Matrix: Brine

Analyst: JLP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Calcium	24000		mg/L	12000	2000	07/18/13	PT13G18A	07/18/13	T313G18A
2. Magnesium	4300		mg/L	4000	2000	07/18/13	PT13G18A	07/18/13	T313G18A
3. Potassium	2700		mg/L	40	2000	07/18/13	PT13G18A	07/18/13	T313G18A
4. Sodium	69000		mg/L	12000	2000	07/18/13	PT13G18A	07/18/13	T313G18A

Trace Elements by ICP/AES, Total Recoverable (EPA 0200.7-M/EPA 0200.7)

Aliquot ID: 56917-001B

Matrix: Brine

Analyst: JLP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Iron	23		mg/L	5.0	500	07/24/13	PT13G24A	07/24/13	T313G24A

Trace Elements by ICP/MS, Dissolved (EPA 0200.8)

Aliquot ID: 56917-001A

Matrix: Brine

Analyst: JLP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Barium	0.66		mg/L	0.40	400	07/25/13	PT13G25D	07/25/13	T213G25A

Alkalinity by Colorimetry (EPA 0310.2)

Aliquot ID: 56917-001

Matrix: Brine

Analyst: JEB

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Bicarbonate Alkalinity (NN)	U		mg CaCO ₃ /L	250	50	07/23/13	PW13G23B	07/23/13	WP13G23A
2. Carbonate Alkalinity (NN)	U		mg CaCO ₃ /L	250	50	07/23/13	PW13G23B	07/23/13	WP13G23A

Sulfate (Turbidimetric) (EPA 0375.4)

Aliquot ID: 56917-001

Matrix: Brine

Analyst: RKP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Sulfate (NN)	290		mg/L	50	50	07/26/13	PW13G26D	07/26/13	WP13G26A

pH, Electrometric (EPA 9040C)

Aliquot ID: 56917-001C

Matrix: Brine

Analyst: EAS

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. pH	5.07		pH Units	NA	1.0	NA	NA	07/15/13 00:00	NA

Sulfide (HACH 8131)

Aliquot ID: 56917-001

Matrix: Brine

Analyst: RKP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Sulfide (NN)	U		mg/L	0.50	50	07/17/13 08:29	PW13G17A	07/17/13 12:09	WP13G17A

Specific Conductance at 25°C (SM 2510 B.)

Aliquot ID: 56917-001C

Matrix: Brine

Analyst: EAS

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Specific Conductance	640000		µmho/cm	1000	1000	NA	NA	07/16/13	NA

 1914 Holloway Drive
 11766 E. Grand River
 8660 S. Mackinaw Trail

 Holt, MI 48842
 Brighton, MI 48116
 Cadillac, MI 49601

 T: (517) 699-0345
 T: (810) 220-3300
 T: (231) 775-8368

 F: (517) 699-0388
 F: (810) 220-3311
 F: (231) 775-8584

Client Identification: SWD Specialties, LLC Sample Description: Brine Chain of Custody: 119711
Client Project Name: Schanz 1-3 Dave Elkin Oil Sample No: 1 Collect Date: 07/12/13
Client Project No: NA Sample Matrix: Brine Collect Time: 11:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.

Resistivity at 25°C (SM 2510 B.)				Aliquot ID: 56917-001C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1 Resistivity (NN)	0.016		ohm-m	0.000	1.0	NA	NA	07/16/13	NA

Residue, Filterable (TDS) (SM 2540 C.)					Aliquot ID: 56917-001C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch	
1. Total Dissolved Solids (NN)	320000		mg/L	800	20	07/17/13	NA	07/18/13	NA	

Specific Gravity (SM 2710 F.)				Aliquot ID: 56917-001C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Specific Gravity (NN)	1.205		NA	0.000	1.0	NA	NA	07/15/13	NA

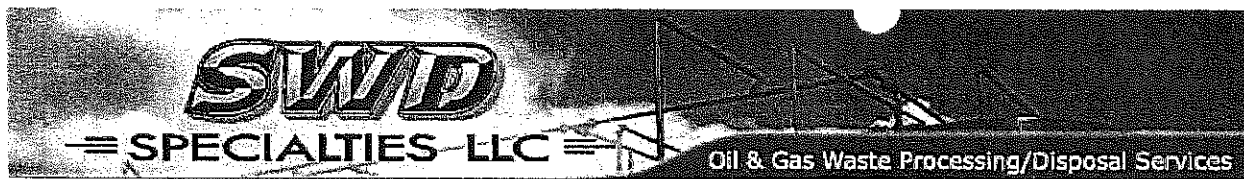
Chloride by Titrimetry (SM 4500-Cl- B.)					Aliquot ID: 56917-001C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch	
1. Chloride (NN)	190000		mg/L	10000	1000	NA	NA	07/16/13	NA	

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584



3947 US 131 North Kalkaska, MI 49646

August 30, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

RECEIVED

SEP 03 2013

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

UIC BRANCH
EPA, REGION 5

RE: **SWD Specialties, LLC Class I&II Waste Source Addition #~~277~~**
Miller 23-41 SWD Injection Well #MI-035-1I-C001
Hogerheide 1-29 SWD Injection Well #MI-079-2D-C001
Simpson 1-9 SWD Injection Well #MI-079-2D-C008
State Blair 5-21 SWD Injection Well #MI-055-2D-C015
Wedow St. Blair 2-28 SWD Injection Well #MI-055-2D-C033
Wlosinski 2-27 SWD Injection Well #MI-079-2D-C016

SWD Specialties, LLC submits the following information and analysis for the following Class II waste approval request to include produced brine and related site fluids including mixtures of brine that include flowback. Please add to the source list for the above referenced injection wells.

Lease: Jennings Petroleum/ Enveron Corp.
Well: Anderson ET AL 1-8A
County: Newaygo
T14N, R11W, S 8 NE¼ of NE¼ of NE¼
Field: No field name found
Formation: Prairie Du Chien

Company: Jennings Petroleum/Enveron Corporation
1818 W. Centre Ave.
Portage, MI 49024
989-327-9191

Please send any correspondence to the address below.

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref 40 CFR Section 144.32)

Thank You,

Colleen Allen
Northern A-1 Environmental Services
P.O. Box 1030
Kalkaska, MI 49646
colleen@northern1.com

cc: Steve Kniss – SWD Specialties
Ken Cooper – Petrotek
Well File

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SEP 03 2013

UIC BRANCH
EPA, REGION 5

Client Identification: SWD Specialties, LLC	Sample Description: Evron / Anderson 1-8	Chain of Custody: 41485.414
Client Project Name: EPA UIC Brine	Sample No: 3	Collect Date: 07/25/13
Client Project No: NA	Sample Matrix: Brine	Collect Time: 04:00

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.

Trace Elements by ICP/AES, Dissolved (EPA 0200.7)

Aliquot ID: 57193-003A

Matrix: Brine

Analyst: JLP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Calcium	2400		mg/L	1200	200	08/08/13	PT13H08C	08/08/13	T313H08A
2. Magnesium	U		mg/L	4.0	200	08/08/13	PT13H08C	08/08/13	T313H08A
3. Potassium	440		mg/L	20	200	08/08/13	PT13H08C	08/08/13	T313H08A
4. Sodium	970		mg/L	12	200	08/08/13	PT13H08C	08/08/13	T313H08A

Trace Elements by ICP/AES, Total Recoverable (EPA 0200.7-M/EPA 0200.7)

Aliquot ID: 57193-003B

Matrix: Brine

Analyst: JLP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Iron	11		mg/L	5.0	500	07/31/13	PT13G31D	08/06/13	T313H06A

Trace Elements by ICP/MS, Dissolved (EPA 0200.8)

Aliquot ID: 57193-003A

Matrix: Brine

Analyst: JLP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Barium	0.60		mg/L	0.40	400	08/08/13	PT13H08A	08/08/13	T213H08A

Sulfate (Turbidimetric) (EPA 0375.4)

Aliquot ID: 57193-003

Matrix: Brine

Analyst: NRV

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Sulfate (NN)	1000	J.L.	mg/L	50	50	08/13/13	PW13H13B	08/13/13	WP13H13A

pH, Electrometric (EPA 9040C)

Aliquot ID: 57193-003C

Matrix: Brine

Analyst: EAS

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. pH	12.18		pH Units	NA	1.0	NA	NA	07/30/13 00:00	NA

Sulfide (HACH 8131)

Aliquot ID: 57193-003

Matrix: Brine

Analyst: JEB

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Sulfide (NN)	U		mg/L	0.50	50	08/02/13 09:08	PW13H02A	08/02/13 09:50	WF13H02A

Alkalinity by Titrimetry (SM 2320 B.)

Aliquot ID: 57193-003

Matrix: Brine

Analyst: RKP

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Bicarbonate Alkalinity (NN)	U		mg CaCO ₃ /L	400	20	08/09/13	WD13H09A	08/09/13	WD13H09A
2. Carbonate Alkalinity (NN)	470		mg CaCO ₃ /L	400	20	08/09/13	WD13H09A	08/09/13	WD13H09A

Specific Conductance at 25°C (SM 2510 B.)

Aliquot ID: 57193-003C

Matrix: Brine

Analyst: EAS

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Specific Conductance	24000		µmho/cm	100	100	NA	NA	08/02/13	NA

 1914 Holloway Drive
 11766 E. Grand River
 8660 S. Mackinaw Trail

 Holt, MI 48842
 Brighton, MI 48116
 Cadillac, MI 49601

 T: (517) 699-0345
 T: (810) 220-3300
 T: (231) 775-8568

 F: (517) 699-0388
 F: (810) 220-3311
 F: (231) 775-8584

RECEIVED

SEP 03 2013

UIC BRANCH
EPA, REGION 5

Client Identification: SWD Specialties, LLC	Sample Description: Evron / Anderson 1-8	Chain of Custody: 41485.414
Client Project Name: EPA UIC Brine	Sample No: 3	Collect Date: 07/25/13
Client Project No: NA	Sample Matrix: Brine	Collect Time: 04:00

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.

Resistivity at 25°C (SM 2510 B.)				Aliquot ID: 57193-003C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1 Resistivity (NN)	0.41		ohm-m	0.000	1.0	NA	NA	08/02/13	NA

Residue, Filterable (TDS) (SM 2540 C.)				Aliquot ID: 57193-003C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1 Total Dissolved Solids (NN)	13000		mg/L	400	10	08/02/13	NA	08/05/13	NA

Specific Gravity (SM 2710 F.)				Aliquot ID: 57193-003C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1 Specific Gravity (NN)	1.010		NA	0.000	1.0	NA	NA	07/30/13	NA

Chloride by Titrimetry (SM 4500-Cl- B.)				Aliquot ID: 57193-003C		Matrix: Brine		Analyst: EAS	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1 Chloride (NN)	3200		mg/L	1000	100	NA	NA	08/02/13	NA

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UIC BRANCH
EPA, REGION 5

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584

RECEIVED

SEP 03 2013

UIC BRANCH
EPA, REGION 5



3947 US 131 North Kalkaska, MI 49646

July 31, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

Via email

RE: SWD Specialties, LLC Class I&II Waste Source Addition #272
Miller 23-41 SWD Injection Well #MI-035-1I-C001
Hogerheide 1-29 SWD Injection Well #MI-079-2D-C001
Simpson 1-9 SWD Injection Well #MI-079-2D-C008
State Blair 5-21 SWD Injection Well #MI-055-2D-C015
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Wlosinski 2-27 SWD Injection Well #MI-079-2D-C016

SWD Specialties, LLC submits the following information and analysis for the following Class II waste approval request to include produced brine and related site fluids including mixtures of brine that include flowback. Please add to the source list for the above referenced injection wells.

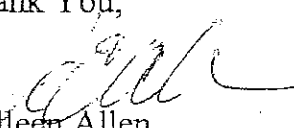
Lease: Encana Oil and Gas USA, Inc.
Well: State Beaver Creek 1-23 HD1
County: Crawford
Surface; T25N, R4W, Section 11 NE ¼ of NW¼ of SE ¼
Bottom; T25N, R4W, Section 23 NE ¼ of SW¼ of NE ¼
Field: No field designation found
Formation: Collingwood

Company: Encana Oil and Gas USA, Inc.
370 17th Street, Suite 1700
Denver, CO 80202
720-876-3533

Please send any correspondence to the address below.

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref 40 CFR Section 144.32)

Thank You,



Colleen Allen
Northern A-1 Environmental Services
P.O. Box 1030
Kalkaska, MI 49646
colleen@northerna1.com

cc: Steve Kniss – SWD Specialties
Ken Cooper – Petrotek
Well File



4125 Cedar Run Rd., Suite B
Traverse City, MI 49684
Phone 231-946-6767
Fax 231-946-8741
www.sosanalytical.com

COMPANY: NORTHERN A-1

NAME:

PROJECT NO: ENCANA ST BEAVER CREEK

WSSN:

WELL PERMIT:

TAX ID:

LOCATION:

MI

COUNTY:

TWP:

SOS PROJECT NO: 133585 - 1

SAMPLED BY: DAVE ROLLINS/NA-1

DATE RECEIVED: 7/24/2013

TIME RECEIVED: 6:30 PM

SAMPLE ID: ENCANA ST BEAVER CREEK

DATE SAMPLED: 7/24/2013

TIME SAMPLED: 7:00 AM

SAMPLE MATRIX: WASTEWATER

INORGANICS

Analysis	Concentration	LOD	Units	Analyst	Date Completed	Drinking Water Reg Limit(MCL)
ALKALINITY SM2320-BICARB	110	10	mg/L (PPM)	KMJ	7/25/2013	
ALKALINITY SM2320-CARBONATE	ND	10	mg/L (PPM)	KMJ	7/25/2013	
BARIUM EPA 200.8	11.4	10.0	mg/L (PPM)	SF	7/25/2013	
CALCIUM EPA 200.8	10500	1000	mg/L (PPM)	SF	7/25/2013	
CHLORIDE EPA 325.2	28700	5000	mg/L (PPM)	KMJ	7/30/2013	
CONDUCTIVITY SM2510-B	120000	1000	uS/cm	KMJ	7/30/2013	
IRON EPA 200.8	69.0	10.0	mg/L (PPM)	SF	7/25/2013	
MAGNESIUM EPA 200.8	1320	1000	mg/L (PPM)	SF	7/25/2013	
pH EPA 150.1	6.5	+/- 0.10	s.u.	CG	7/25/2013	
POTASSIUM EPA 200.8	2210	1000	mg/L (PPM)	SF	7/25/2013	
RESIDUE, FILTERABLE(TDS)/SM2540C	81000	3000	mg/L (PPM)	KMJ	7/30/2013	
RESISTIVITY	0.083		ohm-m	SS	7/31/2013	
SODIUM - EPA 200.8	5370	1000	mg/L (PPM)	SF	7/25/2013	
SPECIFIC GRAVITY	1.0430			RS	7/30/2013	
SULFATE EPA 375.4	175	50	mg/L (PPM)	KMJ	7/26/2013	
SULFIDE EPA 376.2	0.26	0.10	mg/L (PPM)	RS	7/30/2013	

ND = NOT DETECTED

LOD = LIMIT OF DETECTION

SMCL = FEDERAL NON-ENFORCEABLE LIMIT

MCL = MAXIMUM CONTAMINANT LEVEL

s.u. = STANDARD pH UNITS REPORTED AT 25 C

DISS = DISSOLVED

APPROVED BY:

Shanna Shea
SHANNA SHEA
LAB MANAGER

Page 1 of 1

SOS ANALYTICAL, INC. IS CERTIFIED FOR COMPLIANCE MONITORING UNDER THE SAFE DRINKING WATER ACT.



3947 US 131 North Kalkaska, MI 49646

August 1, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

RE: SWD Specialties, LLC Class I&II Waste Source Addition #274
Miller 23-41 SWD Injection Well #MI-035-1I-C001
Hogerheide 1-29 SWD Injection Well #MI-079-2D-C001
Simpson 1-9 SWD Injection Well #MI-079-2D-C008
State Blair 5-21 SWD Injection Well #MI-055-2D-C015
Wedow St. Blair 2-28 SWD Injection Well #MI-055-2D-C033
Wlosinski 2-27 SWD Injection Well #MI-079-2D-C016

SWD Specialties, LLC submits the following information and analysis for the following Class II waste approval request to include produced brine and related site fluids including mixtures of brine that include flowback. Please add to the source list for the above referenced injection wells.

Lease: Arbor Operating, LLC
Well: Norton Woods 1-20A
County: Grand Traverse
Surface; T26N, R11W, Section 20 SE $\frac{1}{4}$ of SE $\frac{1}{4}$ of SE $\frac{1}{4}$
Bottom; T26N, R11W, Section 21 NE $\frac{1}{4}$ of SW $\frac{1}{4}$ of SW $\frac{1}{4}$
Field: Wildcat
Formation: Niagaran



3947 US 131 North Kalkaska, MI 49646

August 1, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

RE: SWD Specialties, LLC Class I&II Waste Source Addition #274
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Well: Norton Woods 1-20A
County: Grand Traverse
Surface; T26N, R11W, Section 20 SE $\frac{1}{4}$ of SE $\frac{1}{4}$ of SE $\frac{1}{4}$
Bottom; T26N, R11W, Section 21 NE $\frac{1}{4}$ of SW $\frac{1}{4}$ of SW $\frac{1}{4}$
Field: Wildcat
Formation: Niagaran



4125 Cedar Run Rd., Suite B
Traverse City, MI 49684
Phone 231-946-6767
Fax 231-946-8741
www.sosanalytical.com

COMPANY: NORTHERN A-1

SOS PROJECT NO: 133585 - 1

NAME:

SAMPLED BY: DAVE ROLLINS/NA-I

PROJECT NO: ENCANA ST BEAVER CREEK

DATE RECEIVED: 7/24/2013

WSSN:

TIME RECEIVED: 6:30 PM

WELL PERMIT:

SAMPLE ID: ENCANA ST BEAVER CREEK

TAX ID:

LOCATION:

DATE SAMPLED: 7/24/2013

TIME SAMPLED: 7:00 AM

SAMPLE MATRIX: WASTEWATER

MI

COUNTY:

TWP:

INORGANICS

Analysis	Concentration	LOD	Units	Analyst	Date Completed	Drinking Water Req Limit(MCL)
ALKALINITY SM2320-BICARB	110	10	mg/L (PPM)	KMJ	7/25/2013	
ALKALINITY SM2320-CARBONATE	ND	10	mg/L (PPM)	KMJ	7/25/2013	
BARIUM EPA 200.8	11.4	10.0	mg/L (PPM)	SF	7/25/2013	
CALCIUM EPA 200.8	10500	1000	mg/L (PPM)	SF	7/25/2013	
CHLORIDE EPA 325.2	28700	5000	mg/L (PPM)	KMJ	7/30/2013	
CONDUCTIVITY SM2510-B	120000	1000	uS/cm	KMJ	7/30/2013	
IRON EPA 200.8	69.0	10.0	mg/L (PPM)	SF	7/25/2013	
MAGNESIUM EPA 200.8	1320	1000	mg/L (PPM)	SF	7/25/2013	
pH EPA 150.1	6.5	+/- 0.10	s.u.	CG	7/25/2013	
POTASSIUM EPA 200.8	2210	1000	mg/L (PPM)	SF	7/25/2013	
RESIDUE, FILTERABLE(TDS)/SM2540C	81000	3000	mg/L (PPM)	KMJ	7/30/2013	
RESISTIVITY	0.083		ohm-m	SS	7/31/2013	
SODIUM - EPA 200.8	5370	1000	mg/L (PPM)	SF	7/25/2013	
SPECIFIC GRAVITY	1.0430			RS	7/30/2013	
SULFATE EPA 375.4	175	50	mg/L (PPM)	KMJ	7/26/2013	
SULFIDE EPA 376.2	0.26	0.10	mg/L (PPM)	RS	7/30/2013	

ND = NOT DETECTED

LOD = LIMIT OF DETECTION

SMCL = FEDERAL NON-ENFORCEABLE LIMIT

MCL = MAXIMUM CONTAMINANT LEVEL

s.u. = STANDARD pH UNITS REPORTED AT 25 C

DISS = DISSOLVED

APPROVED BY:

Shanna Shea
SHANNA SHEA
LAB MANAGER

Page 1 of 1

SOS ANALYTICAL, INC. IS CERTIFIED FOR COMPLIANCE MONITORING UNDER THE SAFE DRINKING WATER ACT.

Company: Encana Oil and Gas USA, Inc.
370 17th Street, Suite 1700
Denver, CO 80202
720-876-3533

Please send any correspondence to the address below.

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref 40 CFR Section 144.32)

Thank You,


Colleen Allen
Northern A-1 Environmental Services
P.O. Box 1030
Kalkaska, MI 49646
colleen@northern1.com

cc: Steve Kniss – SWD Specialties
Ken Cooper – Petrotek
Well File



3947 US 131 North Kalkaska, MI 49646

July 31, 2013

Rebecca Harvey
United States Environmental Protection Agency
Region 5 UIC Section (WU-16J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Raymond Vugrinovich
Michigan Department of Environmental Quality
Constitution Hall, South Tower, 1st Floor
525 W. Allegan Street
Lansing, Michigan 48933

Via email

RE: SWD Specialties, LLC Class I&II Waste Source Addition #272
Miller 23-41 SWD Injection Well #MI-035-1I-C001
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SWD Specialties, LLC submits the following information and analysis for the following Class II waste approval request to include produced brine and related site fluids including mixtures of brine that include flowback. Please add to the source list for the above referenced injection wells.

Lease: Encana Oil and Gas USA, Inc.
Well: State Beaver Creek 1-23 HD1
County: Crawford
Surface; T25N, R4W, Section 11 NE ¼ of NW¼ of SE ¼
Bottom; T25N, R4W, Section 23 NE ¼ of SW¼ of NE ¼
Field: No field designation found
Formation: Collingwood



4125 Cedar Run Rd., Suite B
Traverse City, MI 49684
Phone 231-946-6767
Fax 231-946-8741
www.sosanalytical.com

COMPANY: NORTHERN A-1

SOS PROJECT NO: 133472

NAME:

SAMPLED BY: CALEB HORTON

PROJECT NO:

WSSN:

DATE SAMPLED: 7/19/2013

WELL PERMIT:

TIME SAMPLED: 3:00 PM

TAX ID:

SAMPLE MATRIX: WATER

LOCATION:

DATE RECEIVED: 7/19/2013

TIME RECEIVED: 4:30 PM

MI

COUNTY:

*MATRIX INTERFERENCE ENCOUNTERED DURING
ANALYSIS OF BARIUM. LOD IS ELEVATED.

TWP:

INORGANICS

No:	Analysis	Concentration	LOD	Units	Analyst	Date Completed	Drinking Water Reg Limit(MCL)
SAMPLE ID: ARBOR NORTON WOODS 1-20							
2	ALKALINITY SM2320-BICARB	320	100	mg/L (PPM)	KMJ	7/25/2013	
2	ALKALINITY SM2320-CARBONATE	ND	100	mg/L (PPM)	KMJ		
2	BARIUM EPA 200.8	ND*	1.0	mg/L (PPM)	SF	7/25/2013	
2	CALCIUM EPA 200.8	89500	1000	mg/L (PPM)	SF	7/25/2013	
2	CHLORIDE EPA 325.2	233000	2500	mg/L (PPM)	KMJ	7/24/2013	
2	CONDUCTIVITY SM2510-B	1010000	12000	uS/cm	KMJ	7/23/2013	
2	IRON EPA 200.8	237	100	mg/L (PPM)	SF	7/25/2013	
2	MAGNESIUM EPA 200.8	8600	1000	mg/L (PPM)	SF	7/25/2013	
2	pH EPA 150.1	6.0	+/- 0.10 s.u.		CG	7/19/2013	
2	POTASSIUM EPA 200.8	17000	1000	mg/L (PPM)	SF	7/25/2013	
2	RESIDUE, FILTERABLE(TDS)/SM2540C	636000	12000	mg/L (PPM)	KMJ	7/23/2013	
2	RESISTIVITY	0.010		ohm-m	SS	7/25/2013	
2	SODIUM - EPA 200.8	16900	1000	mg/L (PPM)	SF	7/25/2013	
2	SPECIFIC GRAVITY	1.2558			RS	7/25/2013	
2	SULFATE EPA 375.4	275	50	mg/L (PPM)	KMJ	7/26/2013	
2	SULFIDE EPA 376.2	0.68	0.10	mg/L (PPM)	RS	7/24/2013	

ND = NOT DETECTED

LOD = LIMIT OF DETECTION

SMCL = FEDERAL NON-ENFORCEABLE LIMIT

MCL = MAXIMUM CONTAMINANT LEVEL

s.u. = STANDARD pH UNITS REPORTED AT 25 C

DISS = DISSOLVED

APPROVED BY:

SHANNA SHEA
LAB MANAGER

Page 2 of 2

Company: Arbor Operating, LLC
104 S. Union Street, Suite 202
P.O. Box 2035
Traverse City, MI 49686
231-941-2237

Please send any correspondence to the address below.

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref 40 CFR Section 144.32)

Thank You,



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Kalkaska, MI 49646
colleen@northern1.com

cc: Steve Kniss – SWD Specialties
Ken Cooper – Petrotek
Paul Husted – Northeastern Exploration
Cheryl Klein – Northeastern Exploration
Well File